MAY 2 5 2004

APPROVED: /M.L./

11/25/2008

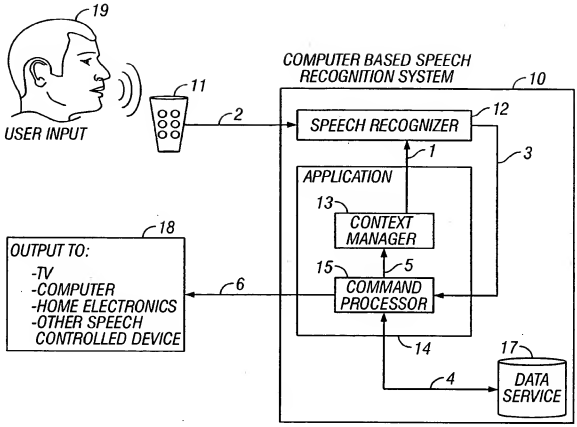

FIG. 1

TOP-LEVEL GRAMMAR 20

UTTERANCE	ATTRIBUTE	LINKED GRAMMAR
"SET"	CHAINED COMMAND	SET GRAMMAR
"FIND"	CHAINED COMMAND	FIND GRAMMAR
ETC.	ETC.	ETC.
ETC.	ETC.	ETC.

"SET" GRAMMAR 22

UTTERANCE	ATTRIBUTE	LINKED GRAMMAR
"OPTIONS"	CHAINED COMMAND	OPTION GRAMMAR
"PREFERENCES"	CHAINED COMMAND	PREFERENCES GRAMMAR
ETC.	ETC.	ETC.
ETC.	ETC.	ETC.

"OPTIONS" GRAMMAR 24

UTTERANCE	ATTRIBUTE	LINKED GRAMMAR
"FAVORITE"	CHAINED COMMAND	FAVORITE GRAMMAR
"BLOCKS"	CHAINED COMMAND	BLOCKS GRAMMAR
ETC.	ETC.	ETC.
ETC.	ETC.	ETC.

"FAVORITES" OPTION 26

UTTERANCE	ATTRIBUTE	LINKED GRAMMAR
"CHANNEL 2"	CHANNEL TYPE	NONE
"CATEGORY"	CHAINED COMMAND	CATEGORY GRAMMAR
ETC.	ETC.	ETC.
ETC.	ETC.	ETC.

"CATEGORY" GRAMMAR 28

UTTERANCE	ATTRIBUTE	LINKED GRAMMAR
"SPORTS"	CATEGORY TYPE	NONE
"MOVIES"	CATEGORY TYPE	NONE
ETC.	ETC.	ETC.
ETC.	ETC.	ETC.

FIG. 2

PROGRAM INFORMATION GRAMMAR 30

UTTERANCE	ATTRIBUTE	LINKED GRAMMAR
"ROBERT REDFORD"	ACTOR TYPE	ROBERT REDFORD
	CHAINED COMMAND	PROGRAMS GRAMMAR
ETC.	ETC.	ETC.
ETC.	ETC.	

ROBERT REDFORD PROGRAMS GRAMMAR 32

UTTERANCE	ATTRIBUTE	LINKED GRAMMAR
"BUTCH CASSIDY"	PROGRAM TYPE	NONE
"THREE DAYS OF THE CONDOR"	PROGRAM TYPE	NONE
ETC.	ETC.	ETC.
ETC.		ETC.

FIG. 3

PROGRAM INFORMATION GRAMMAR 30

UTTERANCE	ATTRIBUTE	LINKED GRAMMAR
"ROBERT REDFORD"	ACTOR TYPE	NONE
ETC.	ETC..	ETC.

FIG. 4

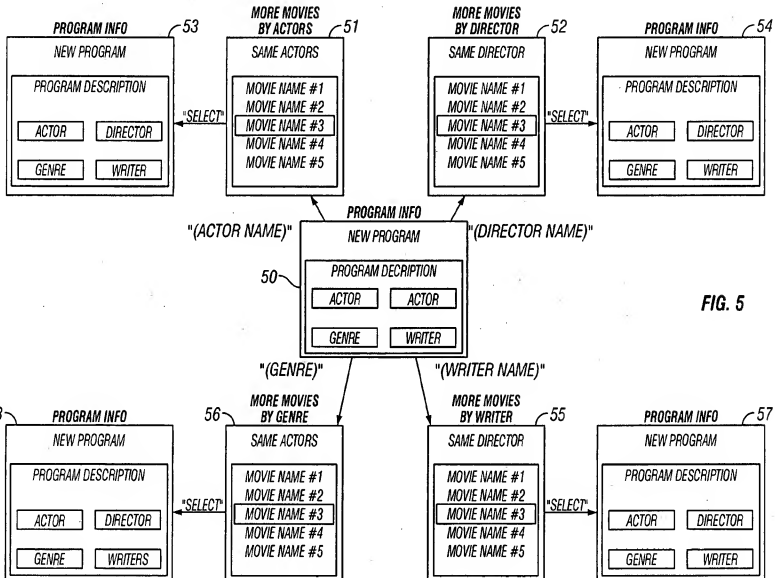
PROGRAM INFO
NEW PROGRAM
PROGRAM DESCRIPTION
ACTOR
DIRECTOR
GENRE
WRITER
53
"SELECT"
MORE MOVIES BY ACTORS
SAME ACTORS
MOVIE NAME #1
MOVIE NAME #2
MOVIE NAME #3
MOVIE NAME #4
MOVIE NAME #5
51
MORE MOVIES BY DIRECTOR
SAME DIRECTOR
52
54
"(ACTOR NAME)"
"(DIRECTOR NAME)"
50
ACTOR
WRITER
"(GENRE)"
"(WRITER NAME)"
58
56
MORE MOVIES BY GENRE
WRITERS
MORE MOVIES BY WRITER
55
57

FIG. 5

STEP-BY-STEP TARGETED SEARCH
(USING INDIVIDUAL COMMANDS)

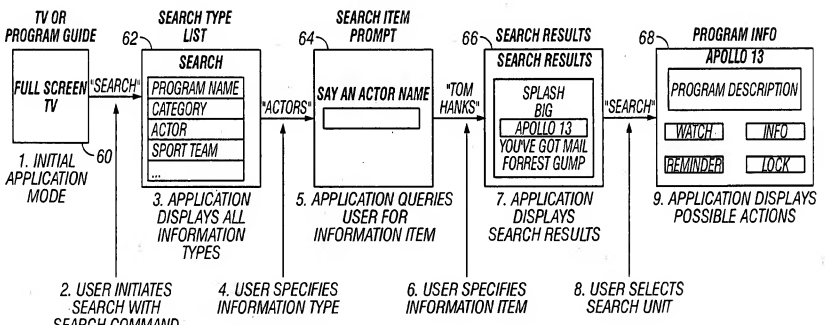

FIG. 6

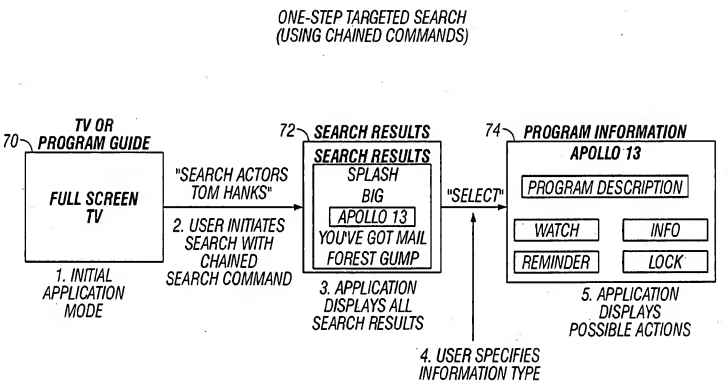
ONE-STEP TARGETED SEARCH
(USING CHAINED COMMANDS)
70
TV OR
PROGRAM GUIDE
FULL SCREEN
TV
1. INITIAL
APPLICATION
MODE
"SEARCH ACTORS
TOM HANKS"
2. USER INITIATES
SEARCH WITH
CHAINED
SEARCH COMMAND
72
SEARCH RESULTS
SEARCH RESULTS
SPLASH
BIG
APOLLO 13
YOU'VE GOT MAIL
FOREST GUMP
3. APPLICATION
DISPLAYS ALL
SEARCH RESULTS
"SELECT"
74
PROGRAM INFORMATION
APOLLO 13
PROGRAM DESCRIPTION
WATCH
INFO
REMINDER
LOCK
5. APPLICATION
DISPLAYS
POSSIBLE ACTIONS
4. USER SPECIFIES
INFORMATION TYPE

FIG. 7

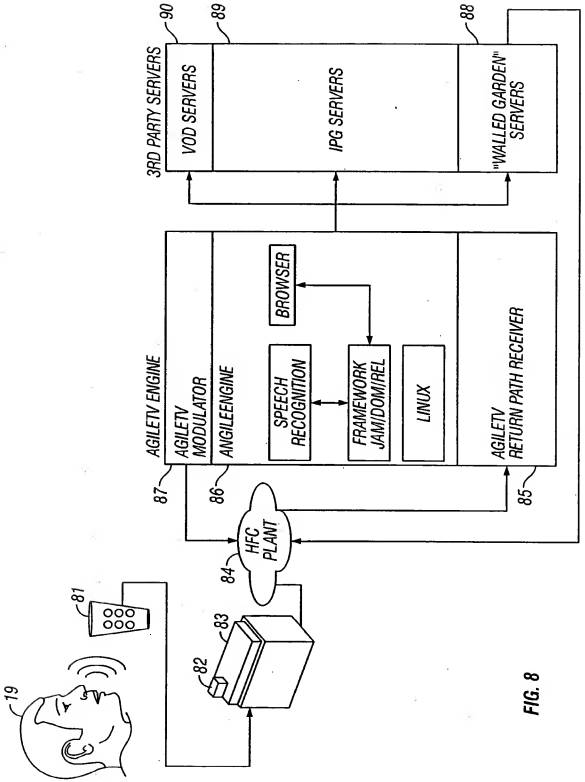
19
81
82
83
84
HFC PLANT
87
86
85
AGILETV ENGINE
AGILETV MODULATOR
ANGILEENGINE
SPEECH RECOGNITION
FRAMEWORK JAMIDOM/REL
BROWSER
LINUX
AGILETV RETURN PATH RECEIVER
3RD PARTY SERVERS
90
VOD SERVERS
89
IPG SERVERS
88
"WALLED GARDEN" SERVERS

FIG. 8

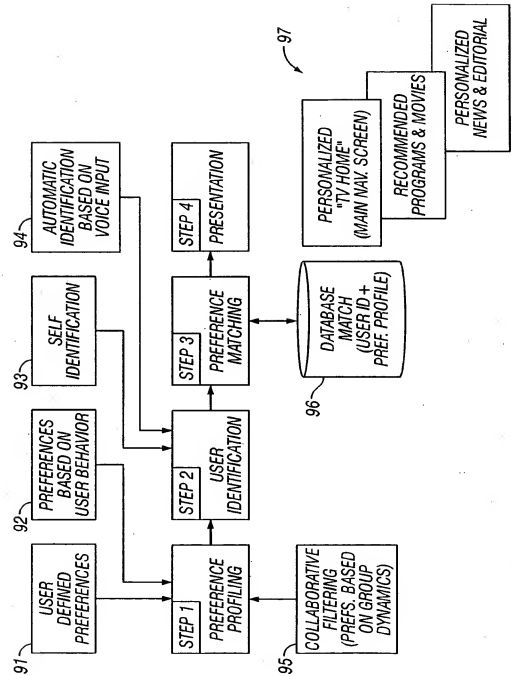
91
USER DEFINED PREFERENCES
92
PREFERENCES BASED ON USER BEHAVIOR
93
SELF IDENTIFICATION
94
AUTOMATIC IDENTIFICATION BASED ON VOICE INPUT
95
COLLABORATIVE FILTERING (PREFS. BASED ON GROUP DYNAMICS)
STEP 1
PREFERENCE PROFILING
STEP 2
USER IDENTIFICATION
STEP 3
PREFERENCE MATCHING
STEP 4
PRESENTATION
96
DATABASE MATCH (USER ID + PREF. PROFILE)
97
PERSONALIZED "TV HOME" (MAIN NAV. SCREEN)
RECOMMENDED PROGRAMS & MOVIES
PERSONALIZED NEWS & EDITORIAL

FIG. 9

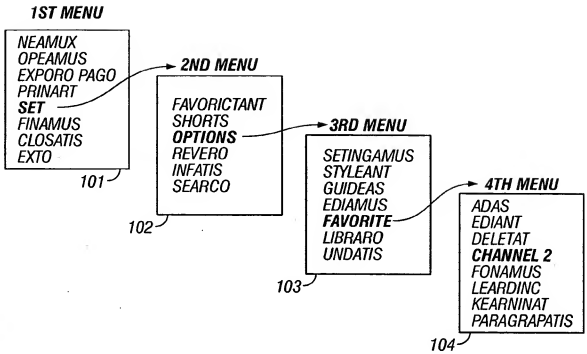

FIG. 10
(PRIOR ART)

FIG. 11

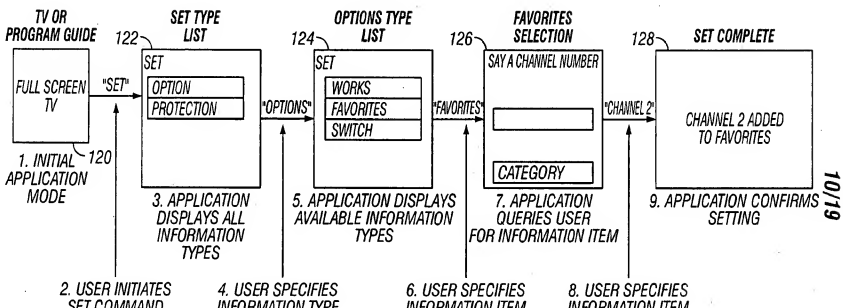
TV OR PROGRAM GUIDE
FULL SCREEN TV
1. INITIAL APPLICATION MODE
120
"SET"
2. USER INITIATES SET COMMAND
SET TYPE LIST
122
SET
OPTION
PROTECTION
3. APPLICATION DISPLAYS ALL INFORMATION TYPES
"OPTIONS"
4. USER SPECIFIES INFORMATION TYPE
OPTIONS TYPE LIST
124
SET
WORKS
FAVORITES
SWITCH
5. APPLICATION DISPLAYS AVAILABLE INFORMATION TYPES
"FAVORITES"
6. USER SPECIFIES INFORMATION ITEM
FAVORITES SELECTION
126
SAY A CHANNEL NUMBER
CATEGORY
7. APPLICATION QUERIES USER FOR INFORMATION ITEM
"CHANNEL 2"
8. USER SPECIFIES INFORMATION ITEM
SET COMPLETE
128
CHANNEL 2 ADDED TO FAVORITES
9. APPLICATION CONFIRMS SETTING
10/19

FIG. 12

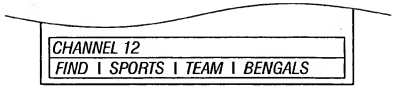

FIG. 13

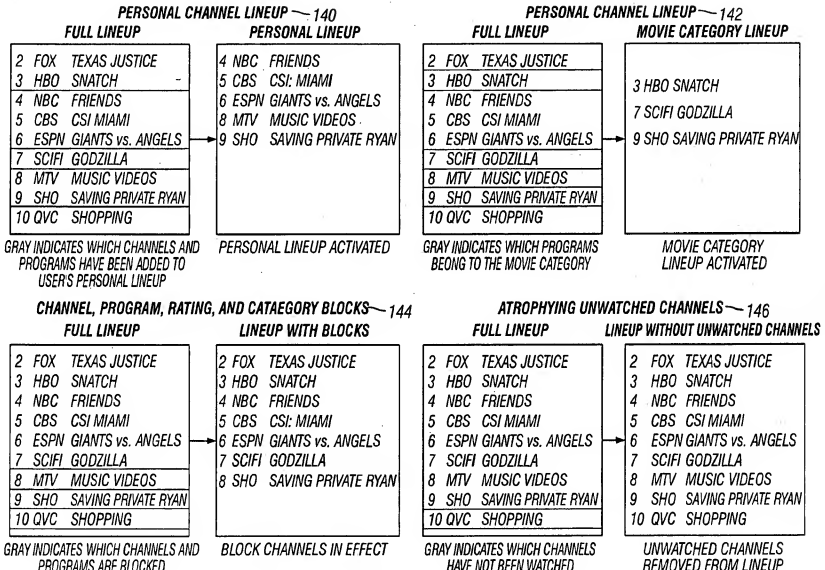
PERSONAL CHANNEL LINEUP 140
FULL LINEUP
PERSONAL LINEUP
2 FOX TEXAS JUSTICE
3 HBO SNATCH
4 NBC FRIENDS
5 CBS CSI MIAMI
6 ESPN GIANTS vs. ANGELS
7 SCIFI GODZILLA
8 MTV MUSIC VIDEOS
9 SHO SAVING PRIVATE RYAN
10 QVC SHOPPING
4 NBC FRIENDS
5 CBS CSI: MIAMI
6 ESPN GIANTS vs. ANGELS
8 MTV MUSIC VIDEOS
9 SHO SAVING PRIVATE RYAN
GRAY INDICATES WHICH CHANNELS AND PROGRAMS HAVE BEEN ADDED TO USER'S PERSONAL LINEUP
PERSONAL LINEUP ACTIVATED
PERSONAL CHANNEL LINEUP 142
FULL LINEUP
MOVIE CATEGORY LINEUP
2 FOX TEXAS JUSTICE
3 HBO SNATCH
4 NBC FRIENDS
5 CBS CSI MIAMI
6 ESPN GIANTS vs. ANGELS
7 SCIFI GODZILLA
8 MTV MUSIC VIDEOS
9 SHO SAVING PRIVATE RYAN
10 QVC SHOPPING
3 HBO SNATCH
7 SCIFI GODZILLA
9 SHO SAVING PRIVATE RYAN
GRAY INDICATES WHICH PROGRAMS BEONG TO THE MOVIE CATEGORY
MOVIE CATEGORY LINEUP ACTIVATED
CHANNEL, PROGRAM, RATING, AND CATAEGORY BLOCKS 144
FULL LINEUP
LINEUP WITH BLOCKS
2 FOX TEXAS JUSTICE
3 HBO SNATCH
4 NBC FRIENDS
5 CBS CSI MIAMI
6 ESPN GIANTS vs. ANGELS
7 SCIFI GODZILLA
8 MTV MUSIC VIDEOS
9 SHO SAVING PRIVATE RYAN
10 QVC SHOPPING
2 FOX TEXAS JUSTICE
3 HBO SNATCH
4 NBC FRIENDS
5 CBS CSI: MIAMI
6 ESPN GIANTS vs. ANGELS
7 SCIFI GODZILLA
8 SHO SAVING PRIVATE RYAN
GRAY INDICATES WHICH CHANNELS AND PROGRAMS ARE BLOCKED
BLOCK CHANNELS IN EFFECT
ATROPHYING UNWATCHED CHANNELS 146
FULL LINEUP
LINEUP WITHOUT UNWATCHED CHANNELS
2 FOX TEXAS JUSTICE
3 HBO SNATCH
4 NBC FRIENDS
5 CBS CSI MIAMI
6 ESPN GIANTS vs. ANGELS
7 SCIFI GODZILLA
8 MTV MUSIC VIDEOS
9 SHO SAVING PRIVATE RYAN
10 QVC SHOPPING
2 FOX TEXAS JUSTICE
3 HBO SNATCH
4 NBC FRIENDS
5 CBS CSI MIAMI
6 ESPN GIANTS vs. ANGELS
7 SCIFI GODZILLA
8 MTV MUSIC VIDEOS
9 SHO SAVING PRIVATE RYAN
10 QVC SHOPPING
GRAY INDICATES WHICH CHANNELS HAVE NOT BEEN WATCHED
UNWATCHED CHANNELS REMOVED FROM LINEUP

FIG. 14

12/19

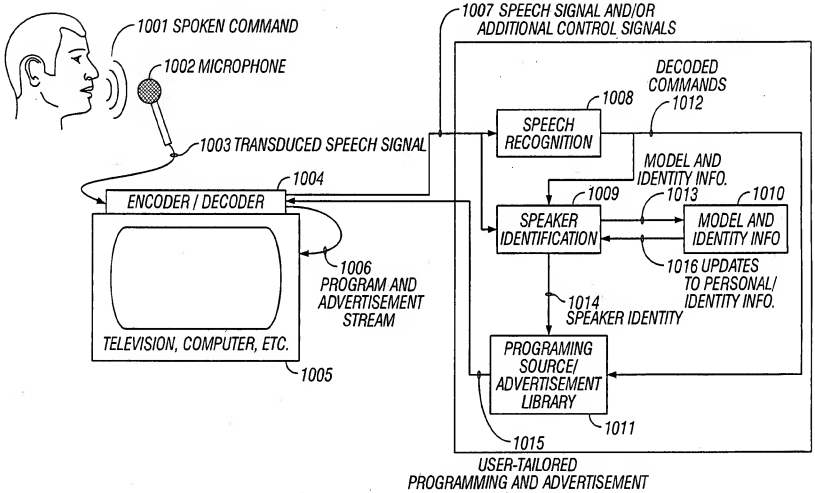
1001 SPOKEN COMMAND
1002 MICROPHONE
1003 TRANSDUCED SPEECH SIGNAL
1004
ENCODER / DECODER
TELEVISION, COMPUTER, ETC.
1005
1006
PROGRAM AND
ADVERTISEMENT
STREAM
1007 SPEECH SIGNAL AND/OR
ADDITIONAL CONTROL SIGNALS
DECODED
COMMANDS
1012
1008
SPEECH
RECOGNITION
MODEL AND
IDENTITY INFO.
1009
1013
1010
SPEAKER
IDENTIFICATION
MODEL AND
IDENTITY INFO
1016 UPDATES
TO PERSONAL/
IDENTITY INFO.
1014
SPEAKER IDENTITY
PROGRAMING
SOURCE/
ADVERTISEMENT
LIBRARY
1011
1015
USER-TAILORED
PROGRAMMING AND ADVERTISEMENT
STREAM

FIG. 15

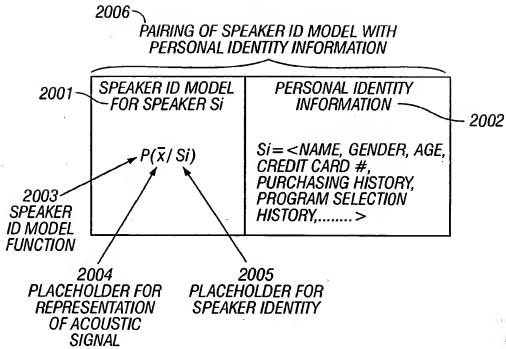
2006
PAIRING OF SPEAKER ID MODEL WITH PERSONAL IDENTITY INFORMATION
2001
SPEAKER ID MODEL FOR SPEAKER Si
PERSONAL IDENTITY INFORMATION
2002
P(x̄/ Si)
Si=<NAME, GENDER, AGE, CREDIT CARD #, PURCHASING HISTORY, PROGRAM SELECTION HISTORY,.....>
2003
SPEAKER ID MODEL FUNCTION
2004
PLACEHOLDER FOR REPRESENTATION OF ACOUSTIC SIGNAL
2005
PLACEHOLDER FOR SPEAKER IDENTITY

FIG. 16

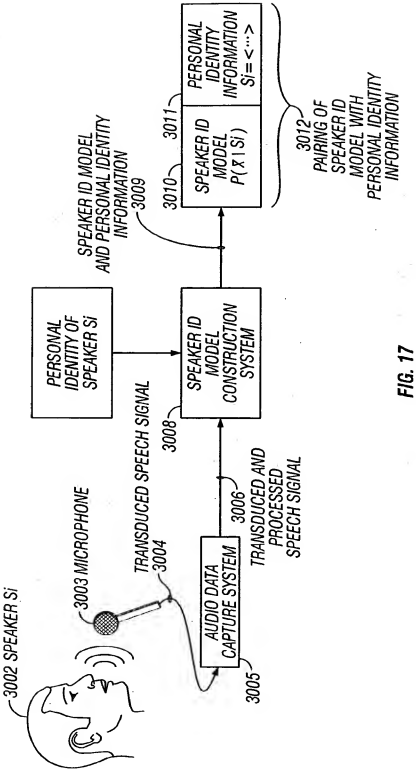
3002 SPEAKER Si
3003 MICROPHONE
TRANSDUCED SPEECH SIGNAL
3004
AUDIO DATA CAPTURE SYSTEM
3005
3006
TRANSDUCED AND PROCESSED SPEECH SIGNAL
3008
SPEAKER ID MODEL CONSTRUCTION SYSTEM
PERSONAL IDENTITY OF SPEAKER Si
SPEAKER ID MODEL AND PERSONAL IDENTITY INFORMATION
3009
3010
SPEAKER ID MODEL P(X | Si)
3011
PERSONAL IDENTITY INFORMATION Si= <...>
3012
PAIRING OF SPEAKER ID MODEL WITH PERSONAL IDENTITY INFORMATION

FIG. 17

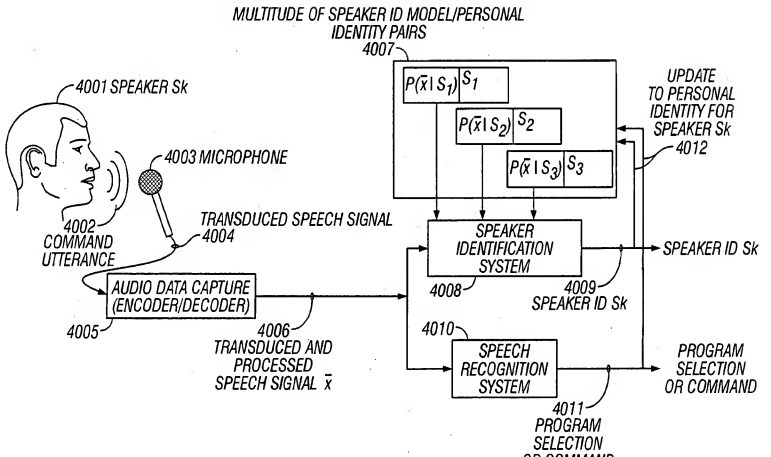
MULTITUDE OF SPEAKER ID MODEL/PERSONAL IDENTITY PAIRS
4007
$P(\bar{x}|S_1)$ S_1
$P(\bar{x}|S_2)$ S_2
$P(\bar{x}|S_3)$ S_3
UPDATE TO PERSONAL IDENTITY FOR SPEAKER Sk
4012
4001 SPEAKER Sk
4003 MICROPHONE
4002 COMMAND UTTERANCE
TRANSDUCED SPEECH SIGNAL 4004
SPEAKER IDENTIFICATION SYSTEM
SPEAKER ID Sk
4008
4009 SPEAKER ID Sk
AUDIO DATA CAPTURE (ENCODER/DECODER)
4005
4006 TRANSDUCED AND PROCESSED SPEECH SIGNAL $\bar{x}$
4010
SPEECH RECOGNITION SYSTEM
PROGRAM SELECTION OR COMMAND
4011 PROGRAM SELECTION OR COMMAND

FIG. 18

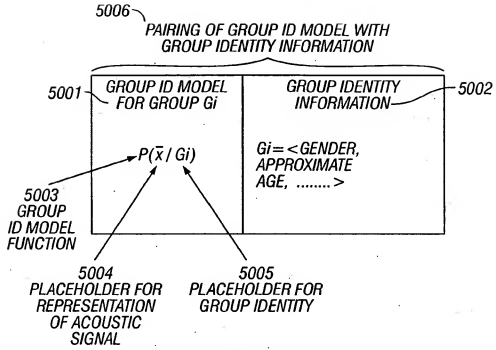
5006
PAIRING OF GROUP ID MODEL WITH GROUP IDENTITY INFORMATION
5001
GROUP ID MODEL FOR GROUP Gi
GROUP IDENTITY INFORMATION
5002
P(x̄ / Gi)
Gi=<GENDER, APPROXIMATE AGE, ... >
5003 GROUP ID MODEL FUNCTION
5004 PLACEHOLDER FOR REPRESENTATION OF ACOUSTIC SIGNAL
5005 PLACEHOLDER FOR GROUP IDENTITY

FIG. 19

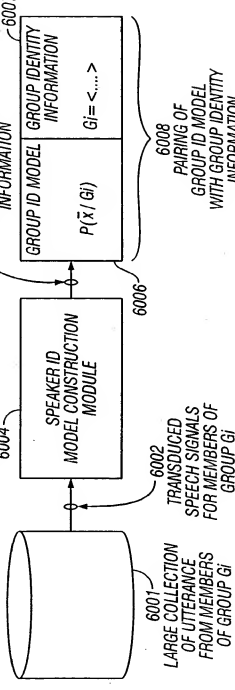
6001
LARGE COLLECTION OF UTTERANCE FROM MEMBERS OF GROUP Gi
6002
TRANSDUCED SPEECH SIGNALS FOR MEMBERS OF GROUP Gi
SPEAKER ID MODEL CONSTRUCTION MODULE
CHARACTERISTICS / IDENTITY OF GROUP Gi
6004
6005 GROUP ID MODEL AND GROUP IDENTITY INFORMATION
6006
6007
GROUP ID MODEL
P(x / Gi)
GROUP IDENTITY INFORMATION
Gi= <....>
6008
PAIRING OF GROUP ID MODEL WITH GROUP IDENTITY INFORMATION

FIG. 20

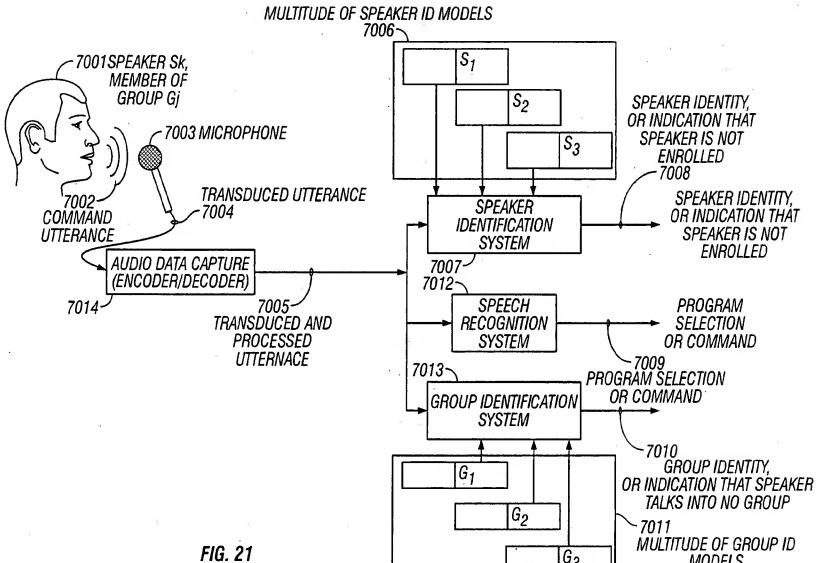
MULTITUDE OF SPEAKER ID MODELS
7006
S_1
S_2
S_3
7001 SPEAKER Sk, MEMBER OF GROUP Gj
7003 MICROPHONE
7002 COMMAND UTTERANCE
TRANSDUCED UTTERANCE 7004
AUDIO DATA CAPTURE (ENCODER/DECODER)
7014
7005 TRANSDUCED AND PROCESSED UTTERNACE
SPEAKER IDENTIFICATION SYSTEM
7007
SPEAKER IDENTITY, OR INDICATION THAT SPEAKER IS NOT ENROLLED
7008
SPEAKER IDENTITY, OR INDICATION THAT SPEAKER IS NOT ENROLLED
7012
SPEECH RECOGNITION SYSTEM
PROGRAM SELECTION OR COMMAND
7009
PROGRAM SELECTION OR COMMAND
7013
GROUP IDENTIFICATION SYSTEM
7010
GROUP IDENTITY, OR INDICATION THAT SPEAKER TALKS INTO NO GROUP
G_1
G_2
G_3
7011 MULTITUDE OF GROUP ID MODELS

FIG. 21